U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

**East Building, PHH-23
1200 New Jersey Avenue Southeast
Washington, D.C. 20590**

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0126/B(U)-96, REVISION 17

REVALIDATION OF CANADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2043/B(U)-96

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and the United States of America[2].

1. Package Identification - MDS Nordion Inc. F-327/F-251, F-327/F-251 MKII, and F-327/F-318 Transport Packages. F-327/F-251: All serial numbers 1 and above. F-327/F-251 MKII: Serial numbers 65 and up. F-327/F-318: Serial numbers 2-15, 17-27, 30-46, 48, 49, 51-61, 63-82, and 84-94.

2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2043/B(U)-96, Revision 22 (attached).

3. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

   c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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[1] "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

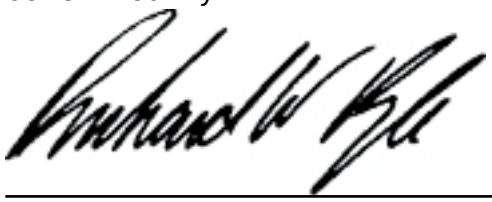
d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

4. Marking and Labeling - The package shall bear the marking USA/0126/B(U)-96 in addition to other required markings and labeling.

5. Expiration Date - This certificate expires on November 30, 2011.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the May 22, 2007 petition by MDS Nordion, Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



Bob Richard
Deputy Associate Administrator for Hazardous Materials Safety

Jun 19 2007
(DATE)

Revision 17 - Issued to revalidate Canadian Certificate CDN/2043/B(U)-96, Revision 22.

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2043/B(U)-96 (Rev. 22)	**Apr-18-2007**	**Nov-30-2011**	**30-A2-209-0**

Certificate
for
Transport Package Design

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the IAEA *Regulations for the Safe Transport of Radioactive Material*.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer:	**MDS Nordion**
Make/Model:	**F-327/F-251; F-327/F-251 MKII and F-327/F-318 Transport Packages**
Mode of Transport:	**Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/2043/B(U) - 96"**.

PACKAGE DESCRIPTION

F-327/F-251: All serial numbers 1 and up

F-327/F-251 MKII: Serial numbers 65 and up

F-327/F-318: Serial numbers 2-15, 17-27, 30-46, 48, 49, 51-61, 63-82 and 84-94

The packaging, as shown in MDS Nordion Drawing Nos. F625101-001 (Rev B) and F631801-001 (Rev A) and as further described in MDS Nordion Document No IS/DS 1687 F327 (Rev 3), consists of a depleted uranium-shielded, stainless steel-encased F-251, F-251 MKII or F-318 shielding vessel centered and supported within a F-327 overpack comprising of a removable head type steel drum and wooden filler inserts for thermal and impact protection. The shielding vessel will contain either the F-368 tungsten insert, or when required for containment, the F-248 or F-320 leakproof insert. The containment system consists of sealed sources or the leakproof insert. The packages are illustrated on attached MDS Nordion Drawing No F-327/F-251 (Issue 14) and F-327/F-318 (Issue 11).

Canada

The configuration of the package is as follows:

Shape: **Drum**
Mass: **160 kg**
Length: **n/a**
Width: **n/a**

Shielding: **Depleted Uranium**
Outer Casing: **Steel**
Height: **521 mm**
Diameter: **490 mm**

AUTHORIZED RADIOACTIVE CONTENTS

The radioactive contents for the various configurations of the F-327/F-251, F-327/F-251 MKII and F-327/F-318 transport packages are listed in Appendix A attached.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- MDS Nordion Document No. IN/QA 0224 Z000 (6)* Radioactive Material Transport Package Quality Plan
- MDS Nordion Document No. IS/DS 1687 F327 (3)*, Design, Manufacturing and Operating Specification for the F327/F251 and F327/F-318 Transport Packages
- MDS Nordion Document No. IN/QA 0562 A000 (3)*, "Sealed Source Quality Plan"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations
- * or latest current revision

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- MDS Nordion Document No. IS/DS 1687 F327 (3)*, Design, Manufacturing and Operating Specification for the F327/F251 and F327/F-318 Transport Packages
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2043/B(U)-96 (Rev. 22)	**Apr-18-2007**	**Nov-30-2011**	**30-A2-209-0**

This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

A. Régimbald
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

Appendix A

Package Configurations and Authorized Radioactive Contents

Isotope	Package Configuration			Chemical and Physical Form
	F-251 MKII or F-251 or F-318 with F-248 insert	F-251 MKII or F-251 or F-318 with F-320 insert	F-251 MKII or F-251 or F-318 with F-368 insert	
I-131	37 TBq (1000 Ci)	37 TBq (1000 Ci)	37 TBq (1000 Ci)	Solid
I-131	7.2 TBq (195 Ci)	13 TBq (350 Ci)	--	Aqueous NaOH solution or aqueous NaOH with up to 0.02 M Na_2SO_4
Ir-192	--	--	300 TBq (8100 Ci)	Special Form capsule*
Mo-99/ Tc-99m	37 TBq (1000 Ci)	55.5 TBq (1500 Ci)	--	Solid or aqueous NaOH solution with up to 1 M NH_4NO_3 or up to 0.4% NaOCI
Sr-90/ Y-90	6.4 TBq (173 Ci) each	11.1 TBq (300 Ci) each	--	Liquid in up to 1 N HCI
Y-90	6.4 TBq (173 Ci)	11.1 TBq (300 Ci)	--	Liquid in 0.04 N HCI
Sr-90/ Y-90	18.5 TBq (500 Ci) each	18.5 TBq (500 Ci) each	--	Solid
Y-90	18.5 TBq (500 Ci)	18.5 TBq (500 Ci)	--	Solid

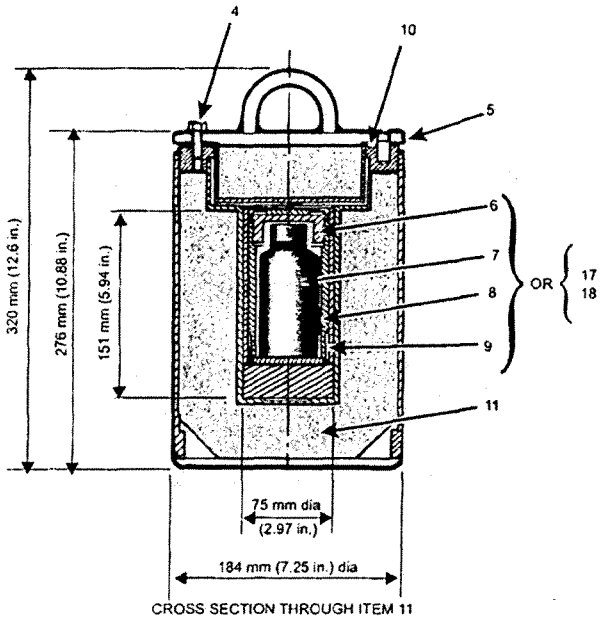
* The package is authorized to contain TC-346 or other Iridium 192 special form capsules that properly fit into the F-368 insert.

Parts List

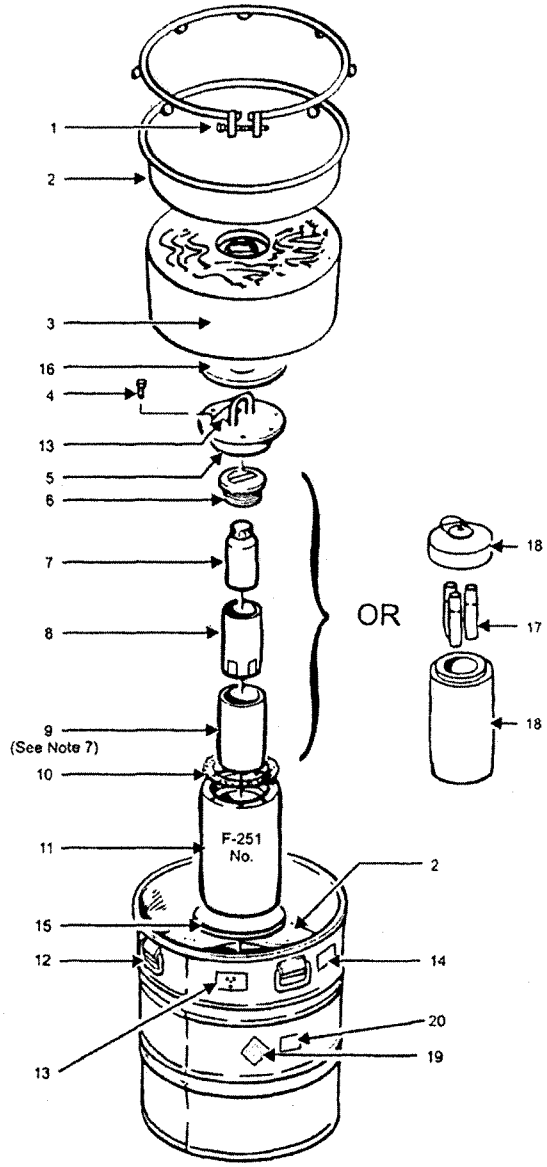
1. Wire seal locking bolt/ring
2. Drum lid
3. Wooden impact/fireshield liner
4. 3/8 - 16 UNC x 7/8 in. long hex head screws SAEJ429 Gr5
5. Depleted uranium shielded plug
6. F-248, F-250 or F-320 leakproof insert cap with 'O'-ring seal
7. 125 mL (4 oz.) or 250 mL (8 oz.) receptacle containing radioactive material
8. One F-248, F-250 or F-320 leakproof insert body
9. Stainless steel adapter (see note 7)
10. Neoprene gasket or 2 neoprene 'O'-rings (F251 Mkll)
11. Depleted uranium shielding vessel
12. Steel drum 489 mm dia. x 521 mm high (19.25 in. x 20.5 in.)
13. Radiation caution plate (3): two on opposite sides of overpack, and one on top of shielded plug
14. Shipping container identification label (2): on two opposite sides
15. Lead plate 184 mm (7 ¼ in.) dia x 6 mm (¼ in.) thick (See note 8)
16. Lead ring 184 mm O.D. x 60 mm I.D. x 6 mm thick (7 ¼ in. x 2 3/8 x ¼ in.) (See note 8)
17. Up to six (6) TC-346 Special Form capsules
18. F-368 tungsten insert
19. Radioactive Category Labels (2): on two opposite sides
20. UN Number labels (2): on two opposite sides, next to Radioactive Category labels

Notes

1. Approximate total weight: 152 kg (335 lb.)
2. Project floor load: 831 kg/m² (170 lb/ft²)
3. Weight of uranium shielded vessel 100 kg (220 lb.)
4. Depleted uranium shielding: 44.4 mm (1.75 in.) thick, encapsulated in stainless steel
5. Meets IAEA Type B(U) requirements
6. CNSC Certificate CDN/2043/B(U) - 96
7. Stainless steel adapter only used with F-248 leakproof insert.
8. Items 15 and 16 are fixed to the lower and upper wooden liners respectively.



CROSS SECTION THROUGH ITEM 11



MDS Nordion
447 March Road, P.O. Box 13500
Kanata, Ontario, Canada, K2K 1X8
Tel: (613) 592-2790 · Fax. (613) 592-6937

TITLE

F-327/F-251 Transport Packaging

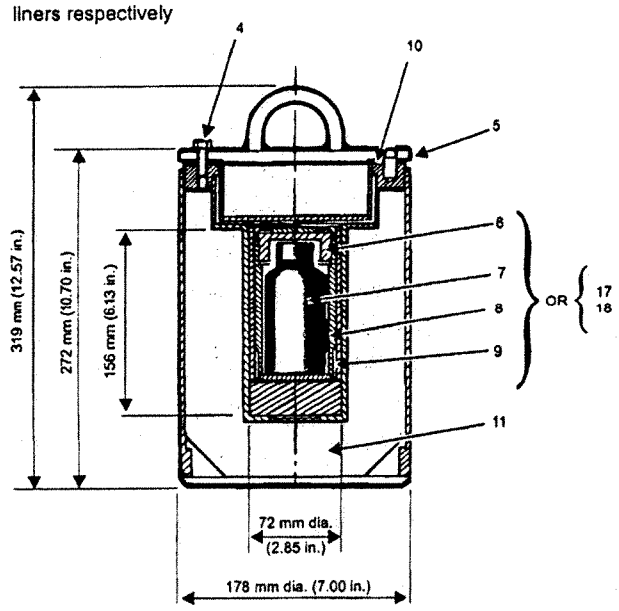
REF. IS/SS 1480 F327/F251 F125101001/F132701001	REVISED Oct 02	DCN A1946-D-05A	
DATE Dec 75	No. F-327/F-251	ISSUE 14	
DRAWN BW	CHECKED VE	APPROVED MK	SHEET 1 OF 2

Parts List

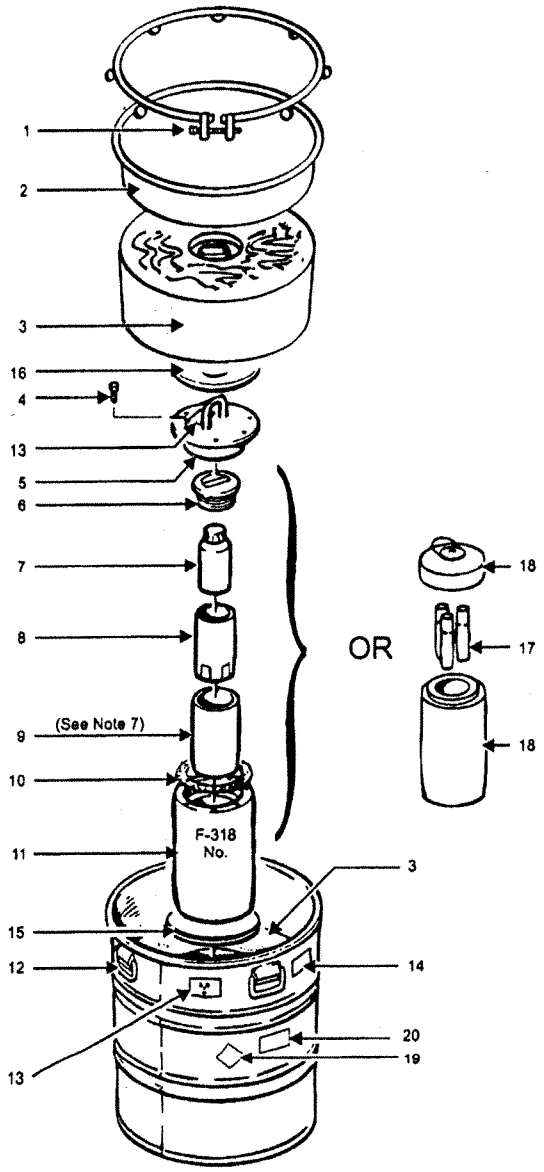
1. Wire seal locking bolt/ring
2. Drum lid
3. Wooden impact/fireshield liner
4. 3/8 - 16 x 1.0 in. long hex head cap screws, SAE J429, Gr. 5 (6)
5. Depleted uranium shielded plug
6. F-248 or F-320 leakproof insert cap with 'O'-ring seal
7. 125 mL (4 oz) or 250 mL (8 oz) receptacle containing radioactive material
8. One F-248 or F-320 leakproof insert body
9. Stainless steel adapter sleeve (see note 7)
10. Neoprene gasket
11. Depleted uranium shielding vessel
12. Steel drum 489 mm dia. x 521 mm high (19.25 in. x 20.5 in.)
13. Radiation caution plate (3): two on opposite sides of overpack, and one on top of shielded plug
14. Shipping container identification label (2): on two opposite sides
15. Lead plate 184 mm dia x 6 mm thick (7 ¼ in. x ¼ in.) (See note 8)
16. Lead ring 184 mm O.D. x 60 mm I.D. x 6 mm thick (7 ¼ in. x 2 3/8 x ¼ in.) (See note 8)
17. Up to six (6) TC-346 Special Form capsules
18. F-368 tungsten insert
19. Radioactive Category Labels (2): on two opposite sides
20. UN number labels (2): on two opposite sides, next to radioactive category labels

Notes

1. Approximate total weight: 148 kg (326 lb.)
2. Project floor load: 809 kg/m² (166 lb./ft.²)
3. Weight of uranium shielded vessel 95.5 kg (210 lb.)
4. Depleted uranium shielding: 44.4 mm (1.75 in.) thick, encapsulated in stainless steel
5. Meets IAEA Type B(U) requirements
6. CNSC Certificate CDN/2043/B(U)-96
7. Stainless steel adapter, only used with F-248 leakproof insert.
8. Items 15 and 16 are fixed to the lower and upper wooden liners respectively



CROSS SECTION THROUGH ITEM 11



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TITLE

F-327/F-318 Transport Packaging

REF. F131801001/F132701001 IS/SS 1481 F327/F318		REVISED Apr 03	DCN A1860-D-12A
DATE April 69		No. F-327/F-318	ISSUE 11
DRAWN BW	CHECKED BM	APPROVED MK	SHEET 1 OF 1

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Washington, D.C. 20590**

CERTIFICATE NUMBER: USA/0126/B(U)-96, Revision 17

ORIGINAL REGISTRANT(S):

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